

## Industrial Wastewater Treatment Plant

The industrial wastewater treatment plant ( IWTP ) is a physical / chemical plant designed to remove solids and turbidity. By removing suspended solids the IWTP also removes a significant portion of BOD5. The IWTP consists of an equalization basin with PH control, chemical coagulation ( consisting of a chemical feed system, a rapid mix basin, a slow mix flocculation basin and two microstrainers. ) The treated wastewater ( effluent ) is pumped to the power canal while the sludge produced from treatment is pumped to the town sewer system. Figure III-1 presents a process flow schematic for the plant. Adjacent to the IWTP is a 60,000 gallon surge tank which is used to equalize surges from the mill. The surge tank is currently O.O.S. due to a fire at the former Strathmore paper mill next to our facility. CDM is currently working on designs for a replacement for this tank.

The process wastewater from the mill flows to a junction manhole located in the yard in front of the IWTP. From the manhole the wastewater flows to the 30,800 gallon equalization basin. The basin was designed as a holding tank to allow complete mixing of the wastewater entering the IWTP, and to equalize hydraulic surges. Phosphoric acid and caustic is added to the equalization tank to adjust the ph to approximately 7.0 to allow for optimum flocculation.

From the equalization tank the wastewater flows to the 2,700 gallon rapid mix basin where chemical flocculation begins. An anionic or cationic polymer is added to the wastewater entering the basin. A 3 hp axial flow turbine mixer provides flash mixing of the wastewater and polymer.

From the rapid mix the wastewater enters the 19,450 gallon slow mix flocculation basin. The slow mix basin provides detention time and agitation necessary to complete the formation of floc which can be removed by the downstream microstrainers. Mixing is provided by a 1.5 hp variable speed turbine flocculator.

From flocculation the wastewater enters the microstrainer chambers which house the two microstrainers (Figure III-2 attached shows microstrainer design). Each microstrainer consists of a 10-ft. diameter, 10-ft. long rotating drum covered with approximately 314 sq. ft. of synthetic microfabric. The microfabric has 41 micron openings. Flow enters the microstrainers through one end and exits through the microfabric where filtering takes place. The microstrainers are submerged in the flowing water to about two thirds of their depth. Figure III-2 illustrates a typical microstrainer.

As the wastewater passes through the microfabric, suspended material is retained on the surface and forms a sludge blanket. As the drum rotates the sludge blanket moves to the top of the drum and is washed off by backwash spray from the spray heads. The sludge falls into a hopper and flows to the sludge pumps which pump the sludge to the town sewer system. Backwash spray flow is approximately 50 gpm per microstrainer.

The wastewater from the microstrainers flows over an effluent weir into the effluent wet well. Here the effluent is again ph adjusted with a trim system to ensure a fairly neutral ph within our NPDES permit limits. From the wet well the effluent is

pumped through a 12-inch force main into an 8-inch diffuser located at the bottom of the power canal. The IWTP has two effluent pumps each rated at 1200 gpm.

Adjacent to the IWTP is the 60,000 gallon surge tank which is currently out of service while CDM works on a replacement. When high flows are encountered a high level switch in the equalization basin starts an auxiliary pump which pumps influent to the surge tank. Overflow from the surge tank was previously directed to the town sewer or brought back to the plant for processing. Until the design and installation of a new surge tank is completed arrangements have been made with automatic valving to retain flows in a holding tank within the mill when plant upset conditions exist.

Magnetic flowmeters are located on the two influent lines from the mill, the effluent line to the canal and the sludge discharge line to the town. Strip chart recorders and totalizers are located on the main control panel in the IWTP. Sample connections exist on all influent, effluent and sludge lines. Influent, effluent and sludge sampling and analysis are performed as required by our NPDES permit and our pretreatment permit with our local POTW require.

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